Guidance for Analysis and Reporting Under the Revised Total Coliform Rule

Addendum #4

(Revision 2)

to the

Quality Assurance Project Plan (QAPP) for the Texas Commission on Environmental Quality Public Water System Supervision (PWSS) Program Relating to the Safe Drinking Water Act

(Revision 12 – QTRAK #16-449)

Effective Date

October 26, 2018

List of Acronyms

Acronym	Definition
§	Chapter or part
CA	corrective action
CFR	Code of Federal Regulations
COC	chain of custody
CROMERR	Cross-Media Electronic Reporting Requirements
E2	Electronic Environmental Drinking Water Reporting System
EPA	Environmental Protection Agency
g	grams
ID	identification
IR	infrared
MCLADW	Manual for the Certification of Laboratories Analyzing Drinking Water (EPA, 5th Ed.)
MF	membrane filter
mg/L	milligrams per liter
mL	milliliters
MRF	Microbial Reporting Form
MTF	multiple tube fermentation
MUG	4-methylumbelliferyl-β-D-glucuronide
P-A	presence-absence
PDF	portable document format
PWS	public water system
PWSS	Public Water Supply Supervision
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
RTCR	Revised Total Coliform Rule
SOP	standard operating procedure
SDWA	Safe Drinking Water Act
SDWIS	Safe Drinking Water Information System
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TCR	Total Coliform Rule
THSC	Texas Health and Safety Code
TNI	The NELAC Institute
UV	ultra violet
WSD	Water Supply Division

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202 - 2733

October 26, 2018

Ms. Sharon Coleman
Quality Assurance Manager
TX Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Dear Ms. Coleman:

I am pleased to inform you that EPA Region 6 has reviewed and approved the TCEQ QAPP for the Public Water Supply Supervision Program (QTRAK#16-449). This approval is the second annual review of this three-year QAPP, effective period being 11/04/2016 through 11/04/2019 and therefore for the third year of its usage.

As a reminder, because these documents expire on 11/04/2019, the quality assurance documents for the next cycle need to be provided to EPA Region at least one month before their expiration.

Thank you for your commitment to QA/QC measures for water quality monitoring that are to be undertaken to ensure and that the drinking water in Texas is as safe as sustainably possible for public consumption. If you have any questions, I can be reached at balli.javier@epa.gov or (214) 665-7261.

Sincerely,

Javier M. Ballí
DWSRF Coordinator and Project Officer

Enclosure.

Cc: Gary Regner, TCEQ PWSSP QA Manager

Annual Review Certification
of the Quality Assurance Project Plan for the
Public Water Supply Supervision Program (PWSSP)
Relating to the Safe Drinking Water Act
of the Texas Commission on Environmental Quality

QTRAK #16-449

Original QAPP Effective Period: 11/04/2016 – 11/04/2019

Year – 3 of 3

Signatures below document certification of the annual review of the PWSSP QAPP by the TCEQ Quality Assurance Specialist. The original QAPP was approved by the Environmental Protection Agency on November 4, 2016. This is the first annual review.

The TCEQ Quality Assurance Specialist has verified that the original QAPP accurately reflects current project requirements. Revisions to Addenda 1, 2, 3 and 4 that were approved in the last year are provided in attachments to this certification. The QAPP is currently approved until November 4, 2019.

The next revision (13) of the PWSSP QAPP will be submitted to EPA in 2019. Amendments that are necessary in the interim will be approved before their provisions are implemented.

10/11/2018
Gary Regner, QA Specialist Date
Water Supply Division, TCEQ

10/12/2018
Gary Chauvin, Program Manager Date
PWSSP, TCEQ

10/15/18
Jim Lancaster, Grant Manager Date
Water Supply Division, TCEQ

10/15
Cari-Michel La Caille, Director Date
Water Supply Division, TCEQ

Enclosures: QAPP Revisions – Addenda 1, 2, 3, and 4

Approval Page – PWSS Program QAPP, Addendum 4

The following TCEQ individuals listed on this page are signatories to this document because they are responsible for the TCEQ's oversight and quality assurance of the work described.

Gary Regner, PWSS Program Quality Assurance (QA) Manager

Texas Commission on Environmental Quality /Office of Water /Water Supply Division

Signature: _____ Date: 10/11/2018

Gary Chauvin, Manager

Texas Commission on Environmental Quality /Office of Water /Water Supply Division / Drinking Water Standards Section

Signature: _____ Date: 10/12/2018

Jessica Hoch, Team Leader

Texas Commission on Environmental Quality /Office of Water /Water Supply Division /Public Drinking Water Section /Drinking Water Assessment Team

Signature: _____ Date: 10/12/2018

Introduction

This document specifies TCEQ requirements related to the analysis and reporting of microbial contaminants in drinking water samples. Laboratories and other entities that generate microbial data—total coliform and *Escherichia coli (E.coli)*—according to these protocols assist the TCEQ in implementing the Safe Drinking Water Act (SDWA). The TCEQ uses the data to make compliance determinations, identify violations, and take assistance actions, thereby protecting public health and ensuring water that is safe to drink.

Requirements in this document are specified for sample collection, chain of custody, analysis, quality control, data validation, and reporting. To submit coliform data to the TCEQ PWSS Program, entities must comply with the criteria and procedures described in this document. The TCEQ reserves the right not to use total coliform and *E. coli* analytical data that do not comply with the specifications defined within this document.

This document reflects changes in requirements due to the promulgation of the Revised Total Coliform Rule (RTCR) [40 Code of Federal Regulations (CFR) §141.851 and 30 Texas Administrative Code (TAC) §290.109] in March 2017. As in the Total Coliform Rule (TCR), total coliform positive results need to be further analyzed for the presence of fecal indicators. The RTCR uses *E. coli* only as an indicator of fecal contamination, rather than fecal coliform.

Other key modifications in the RTCR which affect laboratories include:

- All provisions related to fecal coliform are removed.
- The 30-hour hold time is more clearly defined. The language in the TCR was vague. The RTCR clearly states that the 30-hour hold time refers to the “time from sample collection to initiation of test media incubation.”
- Some changes to the Analytical Methods Table and footnotes were made including but not limited to:
    - The 18th and 19th editions of *Standard Methods for the Examination of Water and Wastewater (Standard Methods)* are no longer approved and applicable references were removed.
    - A clarification to the footnote table indicating that membrane filtration funnels shall be sterilized by autoclave, not UV light, prior to beginning the analysis. UV can still be used to sanitize funnels between filtrations. Alternatively, filtration equipment that is pre-sterilized by the manufacturer is also acceptable.
    - Colisure® is defined as a type of media used to perform the reference method SM 9223, rather than a standalone reference method.

The RTCR applies to all public water systems (PWS). Their laboratories must comply with the requirements of the federal RTCR, at <http://www.epa.gov/dwreginfo/revised-total-coliform-rule-and-total-coliform-rule> and the state RTCR, at <https://www.tceq.texas.gov/drinkingwater/microbial/revised-total-coliform-rule>. This document also reflects the implementation of the Electronic Environmental Drinking Water Reporting System (E2). The E2 System serves as an electronic filing

system that is compliant with EPA's Cross-Media Electronic Reporting Rule (CROMERR) and allows laboratories to manage their own reporting to TCEQ and monitor the status of submitted reports or data.

Note: *TCEQ rules require that samples be submitted in a manner prescribed by the TCEQ. [30 TAC §290.46 (b)] Electronic data submission is strongly encouraged and may be required by the EPA in the future. The TCEQ can work with laboratories to implement electronic reporting. In the interim, laboratories can still report results manually using the Microbial Reporting Form (MRF) 10525 specified in this document.*

This document is part of the TCEQ PWSS Program QAPP which is reviewed and approved by the US Environmental Protection Agency (EPA) for a three-year period. EPA requires annual reviews which may or may not result in modifications. The requirements in this document are specific to the PWSS Program. They are intended to augment and not supersede requirements contained within the analytical methods/laboratory standard operating procedures (SOP), in The NELAC Institute (TNI) laboratory accreditation standard, and in the *EPA Manual for the Certification of Laboratories Analyzing Drinking Water (MCLADW)* at <https://www.epa.gov/dwlabcert/laboratory-certification-manual-drinking-water>.

The current version of this document is located electronically on the TCEQ web page at <https://www.tceq.texas.gov/drinkingwater/microbial/revised-total-coliform-rule>. For questions regarding the implementation of the RTCR, refer to this web page. For specific questions regarding this QAPP Addendum, contact the TCEQ Water Supply Division at (512) 239-4691 and ask for the PWSS Program QA Manager.

Note*: This document does not supersede additional requirements which apply to environmental laboratories. Requirements for training, supplies, equipment maintenance, internal audits, etc. are addressed in laboratory quality manuals (including the Manual for the Certification of Laboratories Analyzing Drinking Water, Fifth Edition) and standard operating procedures, and are reviewed by the TCEQ as part of the laboratory accreditation process.*

Laboratory Requirements/Accreditation

All sample results submitted to the TCEQ under this document must be analyzed by a TCEQ-accredited laboratory using methods allowed by the EPA under the SDWA. Accreditation must be under the ***drinking water matrix***. For questions concerning accreditation, refer to the TCEQ web page located at <https://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html>. For specific questions, call 512-239-3754 or email labprgms@tceq.texas.gov.

The TCEQ Laboratory Accreditation Program issued a revision to the drinking water fields of accreditation for microbiology which was effective October 15, 2016. The fields were revised to provide more clarity for the accredited laboratory, to include *E. coli* as an analyte in addition to total coliforms for presence/absence analyses, and to reflect the RTCR.

Microbial laboratories must adhere to all laboratory accreditation requirements,

including but not limited to performance testing, data integrity, internal audits, laboratory training, development and maintenance of standard operating procedures, internal data review and management, etc.

Sample Collection

Appropriate sample collection is important to ensure sample results are representative of the water being tested. Although this is primarily a laboratory document, aspects of sample collection are included for the following reasons. (1) It is important for laboratories to understand sample collection protocols so they can provide information to sampling personnel when they obtain their collection bottles and when they submit their samples, (2) sampling collection errors may be cause for sample rejection at the laboratory at the time of receipt, and 3) there are circumstances in which laboratory personnel collect drinking water samples. If the latter case applies, laboratory personnel must comply with licensing requirements, as discussed below, that apply to the water system type for which they are collecting samples.

Licensing Requirements for Sample Collectors

Regulations stipulate that only individuals that hold a valid water operator's license may collect compliance samples for community and non-transient, non-community public water systems. [30 THSC, §341.034 and 30 TAC, §290.38] There are four classes of certified water operators: A, B, C, and D. All sample collectors, including those employed by laboratories or operating companies, must have at least a valid class D water operator license to collect microbial samples for community or non-transient non-community PWSs. Only transient non-community water systems using groundwater are exempt from this licensing requirement. For information on how to obtain a license, see < https://www.tceq.texas.gov/licensing/licensing>

Sample Containers

Sample collection personnel must use laboratory-supplied containers to collect coliform samples. Laboratory-supplied containers are typically 120 milliliters (mL), plastic, and disposable, with a 100 mL graduation mark.

Each container provided by the laboratory must be sterile and contain sodium thiosulfate in either powder, pill, or liquid form to neutralize 5 milligrams per liter (mg/L) of residual chlorine. If sample containers are sterilized in the laboratory, then one sample bottle per batch must be tested for sterility using non-selective media. If any growth occurs during a sterility check, the batch must be re-sterilized. If sample containers are purchased as pre-sterilized, then one bottle per lot purchased, or a set percentage such as 1 to 4%, must be tested for sterility using a non-selective media.

Laboratories are also required to check and record the effectiveness of the dechlorinating agent. If water having residual chlorine (measured as free, combined, or total chlorine) is to be analyzed, sufficient sodium thiosulfate must be added to the sample bottle before sterilization to neutralize any residual chlorine in the water sample.

Laboratories are also required to check the accuracy of the container's 100 mL

mark and auto-fluorescence properties (if used for fluorescence testing), once per lot. The results of all quality control (QC) checks must be documented and maintained by the lab.

A certificate of analysis provided by a vendor may be used to address the container testing requirements of this section. The certificate must include **lot-specific** language; a specification sheet for a product type is not sufficient. The certificate must attest to sterility testing using non-specific growth media and that there was an absence of growth after the incubation period. If lot-specific certificates are not supplied with the containers from the vendor, or laboratories prepare their own containers, then the bottle testing requirements described in this subsection apply.

Sample Labels

The sample label information is completed by sample collectors at the time of collection. Laboratories may provide sample labels with their containers. Alternatively, PWSs (or their agents) may supply their own labels or write the sample label information directly on the bottle. These alternatives are all acceptable as long as the required information is included on the bottle or label as follows: [MCLADW, A-1, B.2.]

- PWS Identification (ID) Number
- Date and time sample was collected
- Sampler's initials
- Address/location where the sample was collected.

The sample label information must be recorded legibly with waterproof ink. The sample collector is responsible for filling out the sample label information at the time of collection. Labels may be pre-printed; however, date, time and initials shall be completed at the time of sample collection. A water system merely recording a unique sample ID number on a sample collection bottle is not an acceptable practice for the sample collector, even if the ID number can be matched with information on the MRF or the chain of custody (COC) by the laboratory.

Sample Collection Procedures

For information on proper sample collection procedures and precautions, refer to the TCEQ Regulatory Guidance (RG) 421–*Coliform Sampling for Public Water Systems* at < https://www.tceq.texas.gov/assets/public/comm_exec/pubs/rg/rg-421.pdf >, and the analytical methods addressed in Section 9060 of *Standard Methods.* At a minimum, sampling personnel must measure and record the chlorine residual on the MRF in the field at each sample site. Samples must also be collected at locations specified within the PWS' Sample Siting Plan. Additional details regarding sample collection procedures are specified in RG 421 and within the analytical methods. PWSs shall maintain and adhere to a written Sample Collection Procedure or SOP.

Sample Submittal Documentation

Requirement to use the TCEQ Microbial Reporting Form (MRF) #10525 for Laboratories that Report Results Manually to the TCEQ

If a laboratory has not yet transitioned to the E2 reporting system (which is

strongly encouraged) and still reports sample results manually to the TCEQ, then the sample collector/courier must submit a TCEQ MRF (Form #10525) to the laboratory with their samples. The most current version of the TCEQ MRF may be accessed electronically at <https://www.tceq.texas.gov/drinkingwater/microbial/revised-total-coliform-rule>. Instructions for completing the MRF are included with the form. Laboratories may customize the TCEQ MRF to add their name/logo, contact information, and laboratory ID number in the upper right part of the form. Otherwise, the TCEQ MRF may not be modified and the TCEQ reserves the right to not accept samples/results from modified forms.

***Note**: The TCEQ Laboratory ID Number required on the top, right-hand corner of the MRF is a laboratory specific, ten-digit ID number associated with the Safe Drinking Water Information System (SDWIS). It is usually, but not always, the same as the NELAP Accreditation Certificate Number, minus the last four digits. Email addresses are not included on TCEQ forms for privacy reasons.*

Laboratories may use the TCEQ MRF as their COC to avoid the use of multiple forms. If laboratories utilize a separate COC form to document custody, they shall submit both documents at the time of monthly reporting as described in the Section-*Reporting to the TCEQ*.

Laboratory-Designed MRF Requirements

The TCEQ designed its MRF Form to meet federal and state reporting and quality control requirements related to the Safe Drinking Water Act. It captures certain information (particularly related to PWSs) that laboratories might not routinely include on their own COC forms. Laboratories have asked the TCEQ on numerous occasions to add and/or omit information from its form. If a laboratory has transitioned to the E2 reporting system, it can develop its own MRF that fits its operations as long it complies with rules and regulations regarding COCs, as applicable, and the mandatory information and requirements defined in this section are captured. Laboratory MRFs shall resemble the TCEQ MRF (to aid the TCEQ in manual data entry, data review, and data validation) and must be approved by the TCEQ **prior to use**. The TCEQ can provide the Microsoft Excel version of the TCEQ form to the laboratory, upon request, to use as a template. Laboratory-designed MRFs are not official TCEQ forms; therefore, laboratories must remove the TCEQ form number. Laboratories shall direct questions about modifying forms to the PWSS Program QA Manager at (512)-239-4528 or <PDWS@tceq.texas.gov>. Special situations can be discussed with the TCEQ on a case-by-case basis.

Laboratory-designed MRFs must be designed to capture the information defined below related to both the PWS and the laboratory.

<u>PWS Information</u>

- PWS name, PWS ID number, County, contact name, phone #, and fax #
- Sample collector name, signature, operator license number, and position (owner, operator, other)
- All sample collection information included on the TCEQ MRF 10525, including
  - sample location
  - sample type
  - date and time of sample collection

  - replacement indicator check box
  - original laboratory sample ID and original sample collection date, for all previously rejected samples, repeat samples, and triggered raw water samples
  - field measured chlorine residual
- Relinquished by **signature** line(s) including date and time – if form is used for documenting COC [MCLADW, A-2, C.1]

Laboratory Information

- Laboratory name and contact information
- TCEQ Laboratory ID Number
- Sample Receipt Information including whether the sample was iced, and the actual and corrected sample temperature
- Report to client date and time
- Sample analysis information including analyst, and beginning and ending date and time of incubation
- Individual sample information, including a check box indicating the absence of a laboratory measured chlorine residual, sample results, and laboratory sample ID, and rejection code
- Laboratory approval signature
- Laboratory comments
- Received by **signature** line(s) including date and time – if form is used for documenting COC [MCLADW, A-2, D.1]

Laboratory Sample Receipt

Custody Transfer

When sample collectors/couriers deliver samples to the laboratory, custody must be relinquished to a laboratory sample custodian or designee.

If appropriate personnel are not present to receive the samples, they shall be locked in a designated area of the laboratory to prevent tampering. The person delivering the samples shall make a log entry identifying the samples that were delivered, the date and time of delivery, and where and how the samples were delivered and secured. Laboratory personnel may then receive custody by noting in a logbook the absence of evidence of tampering, unlocking the secured area, and signing the custody form.

The sample custodian (or designee) inspects the sample(s) and sample documentation at the time of receipt for any issues necessitating sample rejection. The sample custodian (or designee) measures and records sample temperature of the samples as described in the next paragraphs.

After the sample custodian inspects and approves the sample and sample submittal documentation, the sample collector, sample custodian or courier, and the laboratory custodian or designee will sign and date the MRF and/or the COC with the date and time it was delivered.

Sample Temperature

Sample temperature must be documented by the laboratory at the time of sample

receipt. To measure sample temperature at receipt, the laboratories may use an infrared (IR) sensor, a bottle blank, a cooler thermometer, or another technique to obtain a temperature measurement. Both the recorded temperature and the corrected thermometer temperature shall be recorded on the MRF, as applicable. A place for a representative sample temperature is provided on the MRF. A temperature for each sample is not required; therefore, only a place for a representative temperature is provided on the MRF. Sample containers must never be opened at sample receipt to measure the temperature of an actual sample. Laboratories must calibrate temperature measuring devices quarterly or annually depending upon the type of device utilized. [MCLADW, V-3, 3.3.2]

Note: *The preferred method for sample transportation is to hold samples in coolers at <10°C during transit to the laboratory. There is not a requirement for thermal preservation or temperature criteria which applies to these samples. The laboratory shall, however, consider the condition of transported samples and question their validity where temperatures are elevated, such that they might affect microbial concentrations in the samples (if present).*

No Chlorine Residual Present

The absence of a chlorine residual must be confirmed in **all compliance samples** (i.e., routine/distribution, repeats, and raw water) and recorded by the laboratory at the time of receipt (or at the time of analysis, depending on laboratory operations). [MCLADW, V-32, 8.3.4] This requires pouring off a very small aliquot of well-mixed/shaken sample leaving at least 100 mL of the sample remaining for coliform analysis. If a chlorine residual is detected, the laboratory must reject the sample and request a replacement. (use rejection code "CL") The absence of a total chlorine residual can be confirmed using test strips, such as those marketed by LaMotte.

Specific requirements related to sample submittal documentation, sample issues, and sample rejection are described in the following sections.

Lab Sample Rejection: Insufficient/Incorrect Documentation

It is extremely important for the laboratory to check the sample documentation (MRF 10525 or laboratory-designed MRF, if applicable) and sample label very carefully at the time of receipt because both insufficient and incorrect documentation may result in monitoring or reporting violations for the PWS. The laboratory can use some discretion assisting sample collectors/couriers with pointing out errors in the documentation at the time of receipt in order to avoid the unnecessary recollection of samples. For example, if the PWS ID # is not filled in at the time of sample receipt, the laboratory can inform the sample collector/courier and they can add the information.

If documentation errors or omissions cannot be fixed or are not fixed at the time of sample receipt, **laboratories must reject the samples**, document the reason on the MRF, and request a replacement. Reasons for rejecting samples due to the omission of mandatory information correspond to rejection codes listed in Table 2. They include, but are not limited to:

- No field-measured chlorine residual on form. Rejection Code "NC"

- Insufficient information (i.e., missing mandatory information). Rejection Code "IN"
  - PWS ID Number missing
  - Sampler name and/or signature missing
  - Sample Type missing
  - Date and/or time of sample collection missing
  - Chain of custody signature and/or date/time missing (initials are not acceptable) [MCLADW, A-2, C.1 & D.1]

Laboratories are not allowed to correct or complete the PWS portion of the MRF (see exception under *Originating Sample Information*). It is the responsibility of the individual collecting the samples to fill out the form (and correct it, if necessary), sign, and date it. Under no circumstances can the laboratory modify the information on the form after it has been received, signed, and dated by the laboratory. If there is a question about modifying sample documentation after samples are received, the laboratory must contact the PWSS Program QA Manager for guidance at (512) 239-4528 or <PDWS@tceq.texas.gov>.

Sample Issues

In addition to reviewing the sample receipt documentation, it is also important for the laboratory custodian (or designee) to check the samples very carefully to determine if any need to be rejected outright. Reasons for rejecting samples outright at the time of sample receipt include, but may not be limited to, the reasons listed below. These reasons also correspond to rejection codes listed in Table 2.

- Broken in transit, rejection code "BR"
- Laboratory-measured Chlorine present, rejection code "CL"
- Exceeded hold time, rejection code "EH"
- Frozen sample, rejection code "FZ"
- Leaked in transit, rejection code "LT"
- Volume insufficient, rejection code "VO"

If a laboratory rejects a sample outright at the time of receipt, the custodian (or designee) shall document the reason on the MRF and request a replacement sample while the sample collector/courier is still on the premises. Rejected samples must be assigned laboratory sample ID numbers and reported to TCEQ. This will enable replacement samples to be tied back to the original sample and ensure the PWS gets proper monitoring credit.

Additional Information Related to Sample Documentation and Sample Issues

Additional detail is provided in the following sections, explaining specific situations or conditions having to do with samples and documentation which the laboratory may encounter at the time of sample receipt. Information on how the laboratory must address each issue is provided.

Sampler Name, Signature, and Operator License Number

The sampler's name and signature must be filled in on the MRF. If this information

is not included on the form when samples are received, the laboratory can request that the information be completed, as long as the sample collector/courier are the same person. Otherwise, the laboratory must reject the sample(s).

The TCEQ requests the operator license number on the MRF to ensure the sample collector is certified as required by regulation. Samples collected for community and non-transient, non-community water systems must be collected by an individual holding a valid water operator's license. There is no licensing requirement for transient non-community water systems. In this case, "N/A" is the correct response. Laboratories cannot confirm the accuracy of this information, only that it is included. The laboratory is not required to reject the samples if the operator license number is not included on the form.

Sample Type

The sample type must be documented correctly on the MRF. If a sample type is not checked, checked incorrectly, or more than one sample type is checked at the time of sample receipt, then the laboratory must request that the sample collector/courier check the appropriate sample type while still on site. If this error is not corrected by the sample collector/courier at the time of sample receipt, then the laboratory must reject the applicable sample and request a replacement. Sample types for compliance include routine (distribution), raw well, and repeat samples. Non-compliance sample types include construction and special purpose samples. All sample types may also be replacement samples, if they have previously been rejected.

No Chlorine Residual (On MRF)

The laboratory must confirm that a *field measured* chlorine residual is documented on the MRF for all compliance samplesprior to arrival at the laboratory. [30 TAC §290.110(c)(4)(D)] In order to help the PWS avoid violations, the laboratories must reject any compliance samples (i.e., routine {distribution}, repeat, and raw well) without a documented field measured chlorine residual recorded on the MRF. *Since this is a field measurement taken at the time of sample collection, this is not an item that can be recorded in the laboratory, if missing.* Special and construction samples are not for RTCR compliance, and therefore the field-measured chlorine residual requirement does not apply. Samples that are rejected for a missing field measured chlorine residual cannot be reported to TCEQ electronically using E2. In these cases, the MRF must be submitted to TCEQ indicating the rejection.

Originating Sample Information

Repeat, replacement, and triggered raw samples require the originating sample ID and collection date to be completed on the MRF. This information is required to link samples back to an original positive or rejected sample. Failure to provide this information can result in monitoring violations. If the originating sample information is **missing**, the laboratory may fill in the information for the PWS with their permission. This is the **ONLY** information the laboratory is allowed to modify on the PWS-completed portion of the MRF.

Sample Holding Time

For the analysis of total coliforms and *E. coli* in drinking water, the time from sample collection to initiation of test media incubation must not exceed 30 hours. All samples received in the laboratory should be analyzed on the day of receipt. If

the laboratory receives the sample late in the day, the laboratory custodian or designee must evaluate the collection time to determine if samples can be run the next day. A sample may be stored overnight in a refrigerator maintained at 2-8 °C (per Section 9020 of *Standard Methods for the Examination of Water and Wastewater)*, or other applicable criteria, as long as it is placed in the incubator within 30 hours of sample collection. If laboratories are not able to meet the sample holding time requirement, then they must reject the sample(s) and request replacement(s). It is the laboratory's responsibility to work with individual sample collectors/couriers to ensure they submit samples consistent with the laboratory's business hours.

Invalid Sampling Point/Invalid Sampling Protocol

It is the responsibility of the PWS to ensure samples are collected at valid sampling points using valid protocols. However, if a laboratory identifies an error related to an invalid sampling point, it must reject the sample(s), use Rejection Code "BP", and request a replacement.

Ground Water Well Identification (ID) Numbers

Ground water well source ID numbers always begin with the letter G, followed by the 7-digit PWS ID, then the letters, "A", "B", "C", etc. to indicate which well it was. Raw well source ID numbers are often reported incorrectly to the TCEQ on the MRF. Instead of recording the correct ID number, the sampling personnel will incorrectly record an address or just "Well A", "Well B", etc. Laboratories should ensure that ground water well ID numbers are recorded correctly and request that sampling personnel/couriers address these types of issues while still on site. Raw well water samples received by TCEQ without source ID codes will be rejected and may result in monitoring violations for the PWS.

Excessive Sample Volume

When collecting a sample, sample collectors are required to fill the bottle slightly over the fill line. They must leave ample air space in the bottle (approximately 1 inch, depending on collection container type) to facilitate mixing by shaking at the laboratory prior to determining the absence of a chlorine residual, and running the analysis. If a sample bottle is too full at receipt to allow for proper mixing, the laboratory must not pour off and discard a portion of the sample. Rather, the laboratory must pour the entire sample into a larger sterile container, mix properly, and proceed with confirming the absence of a chlorine residual and running the analysis. Alternatively, if a sample is filled to capacity, the laboratory can reject the sample outright and use rejection code "EV". This may be appropriate if it is a recurring situation with an individual PWS.

Sample Rejection Codes

There are TCEQ rejection codes corresponding to the sample receipt issues identified in this section which are provided in Table 2. If a sample must be rejected, the laboratory will notify the PWS of the sample rejection immediately (if still on the premises), and no later than the same business day (or the next business day, if after hours), and request a replacement. The PWS must collect another sample from the same location within 24 hours of notification. [30 TAC §290.109(e)(1)(D)] If the lab rejects a sample for a reason without a specific rejection code, the laboratory must use the general code "LR" for "lab rejected" and

document the actual reason on the MRF. Rejected samples must be assigned a laboratory sample ID number and reported to the TCEQ.

Laboratory Equipment and Supplies

The laboratory must have the equipment and supplies needed to perform the methods for which they are accredited. Supplies and equipment (including pH meters, analytical balances, incubators, refrigerators, autoclaves, water baths, temperature monitoring devices, etc.) shall be maintained and calibrated according to the TNI Standard and the analytical methods. In addition, the following criteria apply as specified in the *EPA Manual for the Certification of Laboratories Analyzing Drinking Water.* In cases of conflict, the most stringent criteria apply.

- Glass, dial, or electronic thermometers must be graduated in at least 0.5 degree increments or less. [MCLADW, V-3, 3.3.1]
- The calibration of temperature measurement devices must be checked annually or quarterly depending of the type of device. [MCLADW, V-3, 3.3.2]
- Incubation units must have an internal temperature monitoring device and maintain the temperature specified by the method.
- Membrane filter units must be stainless steel, glass, porcelain, or autoclave safe plastic, not scratched or corroded, and must not leak. See Table 1 footnote #4.
- Membrane filters must be approved by the manufacturer for total coliform analysis.
- Pipettes delivering volumes of 10 mL or less must be accurate to within a 2.5% tolerance.
- Graduated cylinders must be accurate to within a 2.5% tolerance.

Sample Analysis

Allowable Methods

All coliform samples must be analyzed by a TCEQ-accredited laboratory using EPA-allowable methods under the SDWA. (See Table 1). Accreditation must be under the ***drinking water matrix***. These methods may change over time and the Code of Federal Regulations (CFR) is the definitive source for allowable methods. Refer to 40 CFR §141 Subpart C, Appendix A at <https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr141_main_02.tpl> which includes the alternative testing methods. Only the analytical methods for which the TCEQ currently accredits are included in Table 1.

The RTCR requires that total coliform positive results be further analyzed for the presence of fecal indicators. The RTCR uses *E. coli* **only** as an indicator of fecal contamination, rather than fecal coliform. Determination of density is not required. With the revision of the TCR, the 18th and 19th editions of Standard Methods are no longer allowed. See Note 1 at the bottom of Table 1.

Table 1. Allowable Methods

Organism	Methodology Category	Method [1]	Citation [1]
Total Coliform	Lactose Fermentation Methods	Standard Total Coliform Fermentation Technique	*Standard Methods* 9221 B.1, B.2 (20st ed., 21st ed., 22nd ed.) [2, 3] *Standard Methods* Online 9221 B.1, B.2–99 [2, 3] *Standard Methods* Online 9221 B.1, B.2–06 [2, 3]
Total Coliform	Lactose Fermentation Methods	Presence-Absence (P–A) Coliform Test	*Standard Methods* 9221 D.1, D.2 (20th ed., 21st ed.) [2, 7] Standard Methods Online 9221 D.1, D.2–99 [2, 7]
Total Coliform	Membrane Filtration Methods	Standard Total Coliform Membrane Filter Procedure	*Standard Methods* 9222 B, C (20th ed., 21st ed.) [2, 4] *Standard Methods* Online 9222 B–97 [2, 4], 9222 C–97 [2, 4]
Total Coliform	Membrane Filtration Method	m-ColiBlue24® Test [2, 4]	
Total Coliform	Membrane Filtration Method	Chromocult [2, 4]	
Total Coliform	Enzyme Substrate Method	Colilert	*Standard Methods* 9223 B (20th ed., 21st ed., 22nd ed.) [2, 5] *Standard Methods* Online 9223 B–97 [2, 5] *Standard Methods* Online 9223 B–04
		Colisure®	*Standard Methods* 9223 B (20th ed., 21st ed., 22nd ed.) [2, 5, 6] *Standard Methods* Online 9223 B–97 [2, 5, 6] *Standard Methods* Online 9223 B–04
		Colilert -18 ®[9]	*Standard Methods* 9223 B (20th ed., 21st ed., 22nd ed.) [2, 5, 6] *Standard Methods* Online 9223 B–04
		E*Colite® Test [2] Readycult® Test [2] modified Colitag® Test [2]	
Escherichia coli	*Escherichia coli* Procedure (following Lactose Fermentation Method)	*EC*–MUG medium	*Standard Methods* 9221 F.1 (20st ed., 21st ed.) [2] and 22nd ed.) *Standard Methods* Online 9221 F.1-06
Escherichia coli	*Escherichia coli* Partition Method	*EC* broth with MUG (*EC*–MUG)	*Standard Methods* 9222 G.1c(2) (20th ed., 21st ed.) [2, 8]
		NA-MUG Medium	*Standard Methods* 9222 G.1*c* (20th, 21st ed.)
Escherichia coli	Membrane Filtration Method	Membrane Filtration using MI medium	EPA Method 1604 [2]
Escherichia coli	Membrane Filtration Method	m-ColiBlue24® Test [2, 4]	
Escherichia coli	Membrane Filtration Method	Chromocult [2, 4]	
Escherichia coli	Enzyme Substrate Methods	Colilert®	*Standard Methods* 9223 B (20th ed., 21st ed., 22nd ed.) [2, 5 ,6] *Standard Methods* Online 9223 B–97 [2, 5, 6] *Standard Methods* Online 9223-B-04
		Colisure®	*Standard Methods* 9223 B (20th ed., 21st ed., 22nd ed.) [2, 5 ,6] *Standard Methods* Online 9223 B–97 [2, 5, 6]

Table 1. Allowable Methods

Organism	Methodology Category	Method [1]	Citation [1]
			Standard Methods Online 9223-B-04
		Colilert -18 ®[9]	*Standard Methods* 9223 B (20th ed., 21st ed., 22nd ed.) [2, 5, 6] *Standard Methods* Online 9223 B–04
		E*Colite® Test [2] Readycult® Test [2] modified Colitag® Test [2]	

Table 1: Notes

1. The procedures must be carried out in accordance with the documents listed in 40 CFR §141.852(c). For *Standard Methods*, the 20th, 21st, or 22nd editions may be used. For the Standard Methods Online, the year in which each method was approved by the Standard Methods Committee is designated by the last two digits following the hyphen in the method number. The methods listed are the only online versions that may be used. For vendor methods, the date of the method listed in 40 CFR §141.852(c) is the date/version of the approved method. The methods listed are the only versions that may be used for compliance with the RTCR. Laboratories shall be careful to use only the approved versions of the methods, as product package inserts may not be the same as the approved versions of the methods.

2. Incorporated by reference. See 40 CFR §141.852(c).

3. Lactose broth, as commercially available, may be used in lieu of lauryl tryptose broth, if the PWS conducts at least 25 parallel tests between lactose broth and lauryl tryptose broth using the water normally tested, and if the findings from this comparison demonstrate that the false-positive rate and false-negative rate for total coliforms, using lactose broth, is less than 10 percent.

4. All filtration series must begin with membrane filtration equipment that has been sterilized by autoclaving. Exposure of filtration equipment to ultraviolet (UV) light is not adequate to ensure sterilization. Subsequent to the initial autoclaving, exposure of the filtration equipment to UV light may be used to sanitize the funnels between filtrations within a filtration series. Alternatively, membrane filtration equipment that is pre-sterilized by the manufacturer (i.e., disposable funnel units) may be used.

5. Multiple-tube and multi-well enumerative formats for this method are approved for use in presence-absence determination under the RTCR.

6. Colisure® results may be read after an incubation time of 24 hours.

7. A multiple tube enumerative format, as described in *Standard Methods* 9221, is approved for this method for use in presence-absence determination under the RTCR.

8. The following changes must be made to the *EC* broth with MUG (*EC*–MUG) formulation: Potassium dihydrogen phosphate, KH_2PO_4, must be 1.5 grams (g), and 4-methylumbelliferyl-Beta-D-glucuronide must be 0.05 g.

9. The warm-up step for Colilert-18 is initiated after the addition of media and marks the beginning of incubation period. Total coliforms are temperature sensitive and warm-up at 44.5 °C shall not exceed 7-10 minutes. Water bath water levels shall reach the level of the top of the sample.

Sample Volume

The sample volume analyzed for total coliforms in drinking water must be 100 mL regardless of method used. To ensure accuracy and consistency, it is important that the laboratory obtain precise measurement of the volume of sample to be analyzed.

Sample Confirmation

A total coliform-positive result is based on the confirmed phase if the Multiple Tube

Fermentation (MTF) Technique or Presence-Absence (P-A) Coliform Test is used, or the verified test for the Membrane Filter (MF) Technique if M-Endo medium or LES Endo agar is used. No requirement exists to confirm a total coliform-positive result using Colilert, Colilert-18, Colisure, MI agar, E*Colite, m-ColiBlue24, Chromocult, Readycult/Fluorocult, Coliscan, or Colitag test. Also, no requirement exists to confirm a positive *E. coli* test. In those rare cases where a presumptive total coliform-positive culture does not confirm/verify as such, but is found to be *E. coli*-positive, the sample is considered total coliform-positive *E. coli*-positive.

Rejecting Samples at the Time of Analysis

The laboratory may encounter issues with samples at the time of analysis that do not allow it to begin or complete an analysis. These occurrences are frequently referred to as "unsuitable for analysis." Possible issues include, but are not limited to, cloudy or turbid samples, lab accidents such as spilled samples, or exceeding hold time. The laboratory must notify the PWS on the same day it detects the issue and rejects the sample (or the next business day, if after hours) so the PWS can collect another sample within 24 hours of notification. The laboratory must also report "rejections" to the TCEQ monthly as described in the section—*TCEQ Reporting*.

Rejecting Invalid Sample Results

If there are problems with the analysis that do not allow the lab to come to a conclusive result (such as potential interference), then the sample results shall be deemed invalid and rejected. The reasons for invalidating a total coliform sample result (unless total coliforms are detected) include but are not limited to the following: [40 CFR §141.853(c)(2)]

- Production of a turbid culture in the absence of gas production using an analytical method where gas formation is examined (e.g., Multiple Tube Technique). Rejection code "ST"
- Production of a turbid culture in the absence of an acid reaction in the P-A Coliform Test. Rejection code "ST"
- Exhibiting confluent growth or producing colonies too numerous to count with an analytical method using a membrane filter (e.g., Membrane Filter Technique). Rejection code "HB"

Another possible reason for invalidating total coliform sample results is when there is a turbid culture after incubation using Standard Methods 9223, but no color change. This has been reported as an issue by some laboratories. In these circumstances, the inhibitors in the media may be overwhelmed by heterotrophic bacteria and the target organisms are not allowed to grow. These situations should, but are not required to be, reported to the TCEQ before reporting a negative sample result.

If a laboratory rejects a sample result or a laboratory error occurs, the laboratory must notify the PWS on the same day it rejects invalid sample results (or the next business day, if after hours) so the PWS can collect another sample within 24 hours of notification. The laboratory must also report these occurrences to the TCEQ monthly as described in the section—*TCEQ Reporting*.

Reporting Requirements

Sample results (except positives) must be reported to the TCEQ within ten (10) days following the end of the monitoring period (month). Only samples used for compliance need to be reported to TCEQ. Special and construction samples are not for compliance under the RTCR and are not required to be reported to TCEQ.

Electronic Result Reporting

The E2 is a web-based information system that allows drinking water laboratories to electronically submit their data to the TCEQ in compliance with EPA CROMERR. E2 users must have an authorized user account, be granted an association with their laboratory, and fill out a participation agreement.

Currently, the E2 system allows laboratories to submit the compliance data from the TCEQ MRF. E2 allows the laboratory to report compliance data to the TCEQ utilizing two options:

- Online data entry option
- Data upload option

Users of E2 should refer to the guide–*Electronic Environmental Drinking Water Reporting (E2-DWR) System, Laboratory User Guide*, Version 2.4, <https://www.tceq.texas.gov/drinkingwater/e2-reporting-system>. Quick User Guides for both options are also included on the TCEQ website.

Data submitted electronically using E2 may not be modified by TCEQ staff in order to remain compliant with CROMERR. If corrections are warranted, the laboratory must contact the TCEQ in advance and submit corrected data electronically.

Contact Information

For questions or concerns regarding E2, the E2 staff can be reached at: <ESubData@tceq.texas.gov>

Minimum System Requirements

Laboratories must be able to access the TCEQ E2 website through the Internet. Typically, such access is available either through a dedicated connection (i.e. local area network) or a modem connection to an Internet Service Provider.

To ensure that all of the features of the E2 system are available, laboratories must use Microsoft Internet Explorer web browser (version 7.0 or higher) or Firefox (version 10.0 or higher). The performance of the E2 system will vary based on the computer internet connection speed, CPU, Operating System, and available memory. The minimum system configuration recommendation is as follows:

- Broadband Internet Connection or higher
- Pentium II processor or higher
- VGA or higher resolution monitor (at least 800 x 600 resolution)
- Microsoft Windows XP or higher
- 256 MB of RAM or higher
- Portable Document Format (PDF) reader for viewing PDF files

- Printer for printing submission in report format and/or copy of record
- Email account

Manual Reporting using the MRF 10525

Electronic reporting is highly encouraged, although manual reporting is still allowed. The method for reporting manual (or hard copy) results to the TCEQ requires the current MRF 10525. If manual results are not reported utilizing the current MRF 10525, the samples will be rejected, which may cause the PWS to receive a monitoring and/or reporting violation. MRFs must be reported to the TCEQ by the 10th day of the month following sample analysis by mailing them to:

Texas Commission on Environmental Quality
Attn: Revised Total Coliform Rule Program
MC 155
PO Box 13087
Austin, TX 78711-3087

Reporting Positive Sample Results

The laboratory must report positive sample results *(*total coliform and/or *E. coli)* to the TCEQ on the same day they are detected using the TCEQ Microbial Monitoring Positive Result Report Form (Positive Result Report Form) and include the MRF, or approved alternate form and analytical results. The current version of this form is located on the TCEQ web page at: <https://www.tceq.texas.gov/drinkingwater/microbial/revised-total-coliform-rule>. The TCEQ uses the Positive Result Report Form to manually enter positive result data into the Safe Drinking Water Information System (SDWIS) database where compliance is determined. This process also generates notification documents that inform the PWS of repeat sampling requirements. The process occurs daily and is in direct response to the positive results reported from laboratories.

In addition to reporting positive results to the TCEQ, the laboratories must also report positive results to the PWS on the day they were detected. [30 TAC §290.109(d)(3)(A) & (D)] The TCEQ uses the analytical results to confirm whether or not the laboratory has informed the PWS of the positive results and verify SDWIS data entries such as PWS Name, TCEQ Laboratory ID, laboratory sample ID, sample collector initials, collection point, collection date and time, chlorine residual level, sample type, type(s) of indicator organisms present.

The laboratory must fax the completed TCEQ Positive Result Report Form and the MRF/analytical results to the TCEQ at 1-800-239-0237. Alternatively, the completed Form and supporting documentation may be scanned and emailed to the TCEQ at RTCRPOS@tceq.texas.gov.

Reporting Repeat Sample Results

The laboratories can assist the TCEQ in the protection of public health and determining treatment technique compliance in a timely manner if they submit the results of all repeat samples (negative, in addition to positive) to the TCEQ on the same day results are determined, or the next business day. The laboratory should scan and email the completed MRF and/or the analytical results provided to the laboratory to the TCEQ at RTCRPOS@tceq.texas.gov. Alternatively, the documents may be faxed to the TCEQ at 1-800-239-0237. Be sure the sample type “Repeat” is documented on the form. Email is the preferred method since faxes are often difficult to read.

Reporting Rejected Samples or Sample Results

If the laboratory rejects a sample or result, these occurrences must be reported in all cases, to the TCEQ in the monthly E2 data report or manually on the MRF. This is required so that the replacement sample results can be tied to the original samples and the sample intent is documented. This will ensure the replacement sample will remain the same sample type as the original sample and that the PWS receives proper monitoring credit. In other words, if the rejected sample is a routine sample, the replacement will also be a routine sample. Samples that are rejected for a missing field-measured chlorine residual or missing PWS ID cannot be reported to TCEQ electronically using E2. In these cases, the MRF must be submitted to TCEQ indicating the rejection <TCRData@tceq.texas.gov>.

Table 2 lists the Rejection Codes and the reasons for using each code. These codes are used for both electronic and manual reporting.

Table 2. Rejection Codes

CODE	DESCRIPTION
BR	Broken in transit
CL	Chlorine present (in sample)
EH	Exceeded hold time
EV	Excessive volume
FZ	Frozen sample
HB	Heavy bacterial growth
ST	Heavy silt or turbidity present
IN	Insufficient sample information
BP	Invalid sampling point
IP	Invalid sampling protocol
LA	Lab accident
LR	Lab rejected
LT	Leaked in transit
NC	No field-measured chlorine residual (on form)
VO	Volume insufficient

In addition to the required TCEQ reporting described in this subsection, the laboratory must notify the PWS immediately, if possible, and no later than the same day (or next business day, if after hours) when the laboratory rejects a sample, so the PWS can collect another sample within 24 hours of notification. [30 TAC §290.109(e)(1)(D) & (E)]

Samples may be rejected by the laboratory at the time of receipt as described in the Section -*Laboratory Sample Receipt*. Samples or results may be rejected later in the analytical process. This is discussed in the Section—*Sample Analysis*.

Analytical Records

The laboratory shall maintain easily accessible records for a minimum of five (5) years from generation of the last entry in the record. Adequate information should be available to allow an auditor to reconstruct the final results for compliance

purposes. Changes in ownership, mergers, or closures of laboratories do not eliminate these requirements. The laboratory must notify the PWS before disposing of records which are less than five years old so they may request copies, if needed. This includes all raw data, calculations, and quality control information. If the laboratory changes its computer hardware or software, it should make provisions for transferring old data to be retrievable in the timeframe listed above.Public water systems must maintain results of microbial analysis for no less than five (5) years. [30 TAC §290.46(f)(3)(D)(i)]

Corrective Actions (CAs)

Any person involved with work described in this document must initiate a CA if there is deviation from required protocols specified in it and/or referenced documents. The procedure for a CA following the identification of a deviation begins with an investigation to determine the root cause(s). The laboratory must select and implement the CAs that will eliminate the problem and prevent recurrence. Any CAs identified must be appropriate in degree to the magnitude and risk of the deviation. Laboratory QA Officers (or designees) are responsible for assuring that CAs are documented, reported, implemented, and tracked appropriately.

Deviations that require CA include, but are not limited to the following:

- Equipment failure
- Excursions from quality control limits
- Samples lost due to laboratory accidents
- Failure to meet acceptance limits when analyzing EPA Proficiency Test samples
- Holding time exceedances

Most CAs can be accomplished at the point of origin using an established procedure through some combination of the following: repair or replacement of faulty equipment; checking reagents for proper strength; etc. CA procedures/response actions are specified in laboratory SOPs that include required documentation, solutions, and follow-up.

Unique deviations/problems that cannot be corrected by the procedures listed above will require CAs to be defined when the need arises.

If laboratory deviations involve the following list, the laboratory QA Officer must notify the TCEQ by phone or e-mail within 48 hours, draft a CA report, and submit it to the PWSS Program QA Manager within 14 days of the incident detection.

- Calls into question the integrity of sample analysis results which have been previously reported to the TCEQ
- Results in non-conformance with state or federal regulations
- Was associated with the intentional misrepresentation of data or information

CA Reports include the following components:

- Description of the problem - how it was identified and the date it was identified
- Root cause

- Description of the significance or consequences of the deviation– include sample ID number(s) affected
- CA(s) taken, including the timetable for implementation
- Actions implemented to prevent recurrence;
- Technicians/staff names (or job titles) involved
- Who prepared the report
- A review process with signatures and dates that includes a manager(s)

The TCEQ will review each CA report and respond within 30 days if (1) actions taken to resolve the deviation are unacceptable, or (2) the TCEQ needs more time to research the issue and make a determination. If CAs taken by a laboratory are unacceptable to the TCEQ, the TCEQ may not use sample results from the laboratory until such time that acceptable CA is achieved.

Corrected data must be submitted in a completely separate file from routinely submitted data. The laboratory must notify the TCEQ in advance in order to prevent duplication in the database of record.

Sample Invalidation

The TCEQ *may* invalidate sample results at a PWS' request under specific circumstances. [30 TAC §290.109(e)(1)] In order to request an invalidation, the PWS must complete the *Total Coliform Positive Invalidation Request Form* <https://www.tceq.texas.gov/drinkingwater/microbial/revised-total-coliform-rule> and provide detailed supporting documentation. Invalidation requests are assessed by the PWSS Program QA Manager and approved by WSD management.

Corrections to the MRF 10525

The TCEQ may authorize corrections to the MRF under certain circumstances after results have been reported by the laboratory. No revisions to the PWS-completed portion of the MRF are allowed by laboratory personnel except filling in missing originating sample information. Corrections made after relinquishment to the laboratory for analysis must be made by the sampler after TCEQ approval. Corroborating information already indicated on the form or on file with TCEQ may be required.

Only corrections that do not affect sample intent or results are allowed.

Examples of permissible corrections:

- PWS ID number (other corroborating information must be present on the form)
- PWS Name
- County
- Sample Identification/Location Typos
- Operator License Number
- Raw water Source ID

- Originating sample information
- "Report Results To" information

Modifications that are NOT permitted:

- Adding a missing field-measured chlorine residual
- Change in sample type from non-compliance to compliance or vice-versa
- Adding a missing sampler name and/or signature
- Adding a missing date and/or time of sample collection
- Adding missing COC "Relinquished By" signature, date and/or time

The PWS requesting the correction must contact TCEQ directly for approval, send corrected copies of the MRF to the TCEQ and laboratory, and have the laboratory submit corrected data to TCEQ in the same manner as originally reported, either manually or electronically.

Falsification and Fraud

Falsification of the MRF or analytical results or tampering with water samples used for compliance with the SDWA is a crime punishable under state and/or federal law. [Texas Penal Code, Title 8, Chapter 37.10] By signing the MRF, the sample collector acknowledges that the water samples were collected according to the PWS's established sample collection procedures, and that all information on the form is accurate. Evidence of falsification or fraud is turned over to the TCEQ Environmental Crimes Unit for investigation.

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